

REMARKS

Claims 2-38 are pending.

By this Amendment, claim 1 is cancelled without prejudice to, or disclaimer of, its subject matter, and claim 23 (previously dependent directly on claim 1) is rewritten into independent form to include all of the limitations of base claim 1 except the phrase "to couple a signal from a pixel of the column of pixels to an accumulator of the column of accumulators which updating the accumulator" has been deleted to broaden the scope of amended claim 23 with respect to original claim 23.

Then, claims 2 and 9 have been amended to depend on claim 23 instead of claim 1, but are otherwise as originally filed. Claims 3-6 and 10-15 remain written as originally filed, but since these claims depend directly or indirectly on claim 2 or 9 (now dependent on claim 23), the scopes of claims 3-6 and 10-15 are changed to the extent that they now depend on claim 23.

Furthermore, by this Amendment, claim 38 is added. Claim 38 derives from the subject matter of original claim 6 except that the paragraph in base claim 1 specifying "a main control circuit" has been deleted, and instead, the elements that make up the main control circuit have been specified as elements of the sensor in claim 38. The elements that make up the main control circuit are specified in original claims 2-5.

More specifically, the first and second switch control circuits specified in original claim 2 have been specified as elements of the sensor of claim 38, and the first and second increment control circuits specified in original claim 3 have been specified as elements of the sensor of claim 38.

Also by this Amendment, the second repeat control circuit specified in original claim 6 has been specified as an element of the sensor of claim 38, and the first repeat control circuit specified in original claims 4 and 5 has been specified as an element of the sensor of claim 38 except that the phrases "each repetitive operation of the first switch control circuit couples a signal from a successive pixel of the column of pixels onto the column bus," "each repetitive operation of the second switch control circuit couples the signal that was coupled onto the column bus from a pixel to a corresponding accumulator of the column of accumulators," "until all pixels of the column of pixels have been successively coupled onto the column bus," and "until the signal on the column bus has been successively coupled into all accumulators of the

column of accumulators” have been deleted to broaden the scope of claim 38 with respect to original claim 6.

Then, claim 7 has been amended to depend on claim 38 instead of claim 6, and a feature recited for the second repeat control circuit in claim 7 has been amended from active to passive voice since “the main control circuit” is not recited in claim 38. Similarly, a feature recited for the second repeat control circuit in claim 8 has been amended from active to passive voice since “the main control circuit” is not recited in claims 7 and 38. Otherwise, claims 7 and 8 remain as originally filed.

Also, claim 16 has been amended to depend on claim 38 instead of claim 6, the conjunction word “and” has been added between the two elements recited in claim 16 to correct a grammatical error, and the phrase “wherein the main control circuit controls the third plurality of switches to couple an accumulated signal from an accumulator of the column of accumulators to the output bus” has been deleted since “the main control circuit” is not recited in claim 38 as discussed above and to broaden the claim.

Since “the main control circuit” is not recited in claim 16 or claim 38, claims 17 and 18 have been amended to specify a third switch control circuit and a third increment control circuit, respectively, as elements of the sensor in claim 38 instead of elements of “the main control circuit.” Otherwise, claims 17 and 18 remain as originally filed. Claims 19 and 20 remain as originally filed. A feature recited for the second repeat control circuit in claims 21 and 22 has been amended from active to passive voice since “the main control circuit” is not recited in claim 20 and claims upon which claim 20 depends. Otherwise, claims 21 and 22 remain as originally filed. Except as described above, claim 16-22 remain essentially as filed, but their scope has been changed to the extent that the scope of claim 38 has changed.

Claim 24-37 remain as originally filed.

1. The Office Action objects to claims 6-8 and 16-22 as dependent on a rejected base claim, but indicates that claims 6-8 and 16-22 would be allowable if rewritten into independent form including all of the limitations of the base claim and any intervening claims. It is respectfully submitted that new independent claim 38, which is derived from claim 6, is allowable for the reasons recited in the Office Action for claim 6 being allowable, and therefore,

it is respectfully submitted that claims 7, 8 and 16-22 are likewise allowable as they are dependent on new claim 38.

2. The Office Action rejects claims 24-37 under 35 U.S.C. §112, first paragraph as failing to comply with the enablement requirement. At least because the Office Action fails to establish a reasonable basis for questioning the adequacy of the disclosure to enable a person of ordinary skill in the art to make and use the claimed invention without resorting to undue experimentation, withdrawal of the rejection of claims 24-37 under 35 U.S.C. §112, first paragraph as failing to comply with the enablement requirement is respectfully solicited.

The test of enablement is discussed in M.P.E.P. 2164.01. "The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation." See *United States v. Teletronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988). Determining enablement is a question of law based on underlying factual findings, *In re Vaeck*, 947 F.2d 488, 495, 20 USPQ2d 1438, 1444 (Fed. Cir. 1991). It is respectfully submitted that the assertions in the Office Action, even if true, do not constitute a sufficient basis for asserting this lack of enablement rejection according to M.P.E.P. 2164.01(b). "As long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claims, then the enablement requirement of 35 U.S.C. 112 is satisfied." See *In re Fisher*, 427 F.2d 833, 837, 166 USPQ 18, 24 (CCPA 1970).

The Office Action asserts two different interpretations of the way to make and use the invention. As its basis for asserting this lack of enablement rejection, the Office Action asserts that the recited limitation "of incrementing the first switch control circuit and a third switch control circuit to output an accumulated value from the column of accumulators" in claims 24, 29, 30, 31, 36 and 37 can be interpreted in two different ways: one enabled and one not enabled. The Office Action further asserts that the enabled way is "where a first switch is incremented then a third switch control circuit is increment to output an accumulated value from the column of accumulators (Page 13, Lines 1-23)." The Office Action then further asserts that for the non-enabled way "there is no support in the specification showing the first switch control circuit

outputting an accumulated value from the column of accumulators.” It is respectfully submitted that claims 24, 29, 30, 31, 36 and 37 specify incrementing both the first and third switch control circuits to output an accumulated value and not that just the first switch control circuit outputs an accumulated value.

The whole of the specification and drawings enables a skilled person to make and use the invention. Page 13, lines 1-23, that the Office Action cites as the disclosure enabling claims 24, 29, 30, 31, 36 and 37, only discloses some of the operation of third switch control circuit 74 and third increment control circuit 76. It is respectfully submitted that the way the Office Action in interpreting the specification fails to consider the whole of the specification.

Other portions of the specification more fully disclose the acts that are specified in method claims 24-30 and the structures that correspond to the means specified in device claims 31-37. For example, page 13, lines 1-9 discloses the operation of third switch control circuit 74 in the way page 9, line 9 through page 10, line 11 discloses the operation of the first and second switch control circuits 62 and 66. Similarly, page 13, lines 10-15 discloses the operation of third increment control circuit 76 in the way page 10, lines 12-27 discloses the operation of the first and second increment control circuits 64 and 68. Page 10, line 27 through page 11, line 2 also discloses the operation of the third increment control circuit 76 and the third switch control circuit 74.

Page 11, line 10 through page 12, line 30 discloses the operation of the first and second repeat control circuits 70 and 72, respectively. In particular, the second repeat control circuit is disclosed as operating the first and third increment control circuits to cause the first and third switch control circuits to be shifted one element more than the second switch control circuit (e.g., page 12, lines 16-21). The specification discloses generally, for example at page 11, line 30 through page 12, line 30, that in one embodiment an extra shift pulse is provided to circuits 62 and 74. See FIG. 6 for the timing of extra shift register pulse 62 and enable read register pulse 74.

More specifically and contrary to the Office Action’s assertions and with respect to claims 24, 29 and 30 and referring to S2 of FIG. 7, the specification discloses generally (e.g., page 15, lines 20-27) a method of scanning an image that includes:

incrementing the first switch control circuit and a third switch control circuit to output an accumulated value from the column of accumulators

as specified in claim 24 and therefore contained in claims 25-30 dependent on claim 24. Similarly, with respect to claims 31, 36 and 37, the specification discloses generally (e.g., page 11, line 30 through page 12, line 30) and the drawings depict generally (e.g., second repeat control circuit 72 depicted in FIG. 5 and extra shift reg pulse 62 and enable read reg pulse 74 both depicted in FIG. 6) a sensor that includes:

means for incrementing the first switch control circuit and a third switch control circuit to output an accumulated value from the column of accumulators

as specified in claim 31 and therefore contained in claims 32-37 dependent on claim 31.

If the Office Action is asserting that only page 13, lines 1-23 disclose how to practice claims 24, 29, 30, 31, 36 and 37, then this Office Action assertion is respectfully traversed. The specification's disclosure is more comprehensive than just page 13, and the Office Action's reliance on the disclosure of only specification page 13, lines 1-23 is overly narrow and misplaced.

More specifically, page 13, lines 1-9 disclose operations of third switch control circuit 74, page 13, lines 10-15 disclose operations of third increment control circuit 76, and page 13, lines 16-23 discloses operations of second repeat control circuit 72. Nowhere on only page 13, lines 1-23 is there any disclosure related to incrementing first switch control circuit 62 or any disclosure of a method of scanning an image that includes:

incrementing the first switch control circuit and a third switch control circuit to output an accumulated value from the column of accumulators

as specified in claim 24. However, as discussed above, the specification discloses this feature of the invention.

Similarly, nowhere on page 13, lines 1-23 is there any disclosure of sensor that includes:

means for incrementing the first switch control circuit and a third switch control circuit to output an accumulated value from the column of accumulators

as specified in claim 31. However, as discussed above, the specification discloses this feature of the invention.

The Office Action's selected portion of the specification simply does not disclose anything about a first switch control circuit. Thus, the Office Action's assertion that the enabled way is "where a first switch is incremented then a third switch control circuit is increment to output an accumulated value from the column of accumulators (Page 13, Lines 1-23)" is unsupported by the Office Action's citation of disclosure on only page 13, lines 1-23. However, as discussed above, the specification discloses this feature of the invention.

Accordingly, withdrawal of the rejection of claims 24-37 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement is respectfully solicited.

3. The Office Action rejects claim 23 under 35 U.S.C. §103(a) as being unpatentable over Audier et al. For at least the following reasons, withdrawal of the rejection of claim 23 is respectfully solicited.

To establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), the Patent and Trademark Office must demonstrate by substantial evidence that the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, contains some suggestion or incentive that would have motivated an ordinarily skilled person to modify the subject matter of a reference to achieve the claimed subject matter. When determining whether the Patent and Trademark Office has met its burden, "the central question is whether there is reason to combine references," *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001).

The Office Action admits that "Audier does not disclose that the column bus, all pixels in the column of pixels," all "switches of the first and second plurality of switches, all accumulators in the column of accumulators, and the main control circuit include poly-crystalline silicon conductors, all poly-crystalline silicon conductors being formed from only a single layer of a patterned poly-crystalline silicon film." However, the Office Action takes Official Notice "that it is well known in the art of CMOS fabrication to use a poly-crystalline silicon conductors formed on a single [sic.] layer of silicon film to form the individual components of the sensor."

M.P.E.P. 2144.03 states that the “examiner may take official notice of facts outside of the record which are capable of instant and unquestionable demonstration as being ‘well-known’ in the art.”

See *In re Ahlert*, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970).

The Official Notice taken in the Office Action is respectfully traversed as over specific. The Applicant denies that to use the single layer poly-crystalline silicon conductors “to form the individual components of the sensor” is a feature that is “capable of instant and unquestionable demonstration as being ‘well-known in the art’” and demands actual evidence thereof be produced and made of record. In fact, CMOS fabrication of sensors is a relatively new technical field, and the known art is still working out which elements (e.g., gate electrodes) can be made from patterning a single layer of poly-crystalline silicon into conductors. “The facts constituting the state of the art are normally subject to the possibility of rational disagreement among reasonable men and are not amenable to the taking of [judicial] notice.” See *In re Eynde*, 480 1364, 1370, 178 470, 474 (CCPA 1973).

Furthermore, there is no basis in the record for taking Official Notice that:

the column bus, all pixels in the column of pixels, all switches of the first and second plurality of switches, all accumulators in the column of accumulators, and the main control circuit include poly-crystalline silicon conductors, all poly-crystalline silicon conductors being formed from only a single layer of a patterned poly-crystalline silicon film

as specified in claim 23 and therefore contained in all claims dependent on claim 23. This degree of specificity is not justified by what is well known in the art.

Even if, *arguendo*, what is actually well known in the art justifies taking Official Notice to the extent taken in the Office Action, neither Aldier et al. nor the Official Notice provides any motivation, teaching or suggestion to modify Aldier et al. “to use a poly-crystalline silicon conductors formed on a single layer of silicon film to form the individual components of the sensor” as asserted in the Office Action. “The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).” See M.P.E.P., section 2143.01, page 2100-98, Rev. 1, Feb. 2000, 7th Ed (emphasis in the original).

“[A] showing of a suggestion, teaching, or motivation to combine the prior art references is an ‘essential component of an obviousness holding’,” *Brown and Williamson Tobacco Corp. v. Phillip Morris Inc.*, 229 F.3d 1120, 1124-1125, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000). “[T]here must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant,” *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998). “[T]eachings of references can be combined only if there is some suggestion or incentive to do so,” (emphasis in original), *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988).

Furthermore, motivation must be found with specificity. “[P]articular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention would have selected these components for combination in the manner claimed,” *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). “[E]ven when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious,” *In re Rouffet*, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998). The Patent Office can satisfy this burden of showing the obviousness of the combination “only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references,” *In re Fitch*, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992).

Audier et al. in view of the Official Notice does not include any teaching or suggestion to motivate a person of ordinary skill in the art to modify the structure of Audier et al. so that:

the column bus, all pixels in the column of pixels, all switches of the first and second plurality of switches, all accumulators in the column of accumulators, and the main control circuit include polycrystalline silicon conductors, all polycrystalline silicon conductors being formed from only a single layer of a patterned polycrystalline silicon film

as specified in claim 23 and therefore contained in all claims dependent on claim 23. As discussed above, it is the burden of the Patent and Trademark Office to demonstrate by substantial evidence that the prior art relied upon contains some suggestion or incentive that

would have motivated an ordinarily skilled person to modify the subject matter of a reference or combine the subject matters of the references to achieve the claimed subject matter.

The only disclosure or teaching in the record of this feature is found in the present patent application itself. However, to establish motivation, it is improper to use the disclosure in the patent application at least because the disclosure is not prior art to the applicant. It is improper to use "that which the inventor taught against its teacher," *W.L. Gore v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-313 (Fed. Cir. 1983). "Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references." *In re Dembiczak*, 175 F.3d 994, 994, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

Accordingly, the withdrawal of the rejection of claim 23, and all claims dependent on claim 23 is respectfully solicited.

4. The Office Action rejects claims 1-5, 9-13 and 24-37 under 35 U.S.C. §102(e) as being anticipated by Audier et al. Claim 1 is no longer pending. Claims 2-5 and 9-13 now depend directly or indirectly on claim 23. If applicable to the present claims, the rejection of claims 2-5 and 9-13 under 35 U.S.C. §102(e) as being anticipated by Audier et al. is respectfully traversed for at least the reasons discussed above with respect to claim 23. Accordingly, withdrawal of the rejection of claims 2-5 and 9-13 under 35 U.S.C. §102(e) as being anticipated by Audier et al. is respectfully requested.

Furthermore, for at least the following reasons, the rejection of claims 24-37 under 35 U.S.C. §102(e) as being anticipated by Audier et al. is respectfully traversed. Audier et al. does not disclose all of the features specified in claims 24-37. "A claim is anticipated only if each and every element as set forth in the claims is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

With respect to method claims 24-30, Audier et al. does not disclose a method that includes:

incrementing the first switch control circuit and a third switch control circuit to output an accumulated value from the column of accumulators

as specified in claim 24, and therefore contained in claims 25-30, dependent on claim 24.

The Office Action asserts on page 10 that after “the nth cycle of incrementing the first and second switch sets to output a plurality of signals from each pixel in the column to their corresponding accumulator Cp updating the signal stored therein, the contents of each accumulator are extracted to the output bus by incrementing the third switches Slec(p) coupling the output of each accumulator Cp to the output bus (Col. 2, Line 39-Col.3, Line 57).” Even if, *arguendo*, Audier et al. teaches this feature as asserted by the Office Action, this feature still does not increment both “the first switch control circuit and a third switch control circuit to output an accumulated value from the column of accumulators” as specified by claim 24. This feature (i.e., providing an extra shift pulse to first switch control circuit 62 and third switch control circuit 74 as depicted in FIG. 6) is absent from the disclosure of Audier et al.

Accordingly, withdrawal of the rejection claims 24-30 as anticipated by Audier et al. is respectfully solicited.

Similarly, with respect to claims 31-37, Audier et al. does not disclose a sensor that includes:

means for incrementing the first switch control circuit and a third switch control circuit to output an accumulated value from the column of accumulators

as specified in claim 31, and therefore contained in claims 32-37, dependent on claim 31.

Accordingly, withdrawal of the rejection claims 31-37 as anticipated by Audier et al. is respectfully solicited.

5. The Office Action rejects claims 14 and 15 under 35 U.S.C. §103(a) as being unpatentable over Audier et al. in view of Hunt et al. If applicable to the present claims, withdrawal of the rejections of claims 14 and 15 is respectfully solicited for at least the following reasons.

Claims 14 and 15 dependent indirectly on claim 23. Audier et al. does not disclose, teach or suggest all of the features specified in claim 23 as discussed above. Accordingly, claims 14 and 15, dependent on claim 23, are unobvious over Audier et al.

Furthermore, Hunt et al. does nothing to rectify the cited deficiencies in Audier et al. Accordingly, claims 14 and 15, dependent on claim 23, are unobvious over Audier et al. in view of Hunt et al.

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. Prompt reconsideration and allowance are earnestly solicited. Should the examiner believe that any further action is necessary to place the application in condition for allowance, the examiner is invited to contact the under signed at the telephone number listed below.

It is believed that no additional fees are due in connection with the filing of this paper and concurrently filed papers, if any. However, should a fee be due (or an overpayment be made), the Commissioner is hereby authorized to charge any fee (or credit any overpayment) associated with this filing to Deposit Account No.

Respectfully submitted,
DORSEY & WHITNEY LLP



by Daniel E. Fisher
Registration No. 34,162
Telephone No. (202) 442-3000

Date:
DEF:
DORSEY & WHITNEY LLP
Suite 400 South
1001 Pennsylvania Avenue, N.W.
Washington, D.C. 20004
Telephone: 202-442-3000
Facsimile: 202-442-3199